What is claimed is:

1. A base station apparatus that performs wireless communications with a mobile terminal apparatus, while relaying the connection between said mobile terminal apparatus and the internet, comprising:

a wireless section that communicates radio signals with said mobile terminal apparatus; and

a protocol relay section that performs proxy processing on a network layer or a transport layer of OSI layer model.

2. The base station apparatus according to claim 1, further comprising:

a propagation state measuring section that measures a radio signal propagation state in the wireless communications with said mobile terminal apparatus; and

a transport layer parameter determining section that determines a transmit control parameter value of a transport layer protocol based on the measurement in said propagation state measuring section.

3. A mobile terminal apparatus that performs wireless communications with a base station apparatus, while relaying the connection between said base station apparatus and the internet, comprising:

a wireless section that communicates radio signals with said base station apparatus; and

a protocol relay section that performs proxy processing on a network layer or a transport layer of

OSI layer model.

4. The mobile terminal apparatus according to claim 3, further comprising:

a propagation state measuring section that measures a radio signal propagation state in the wireless communications with said base station apparatus; and

a transport layer parameter determining section that determines a transmit control parameter value of a transport layer protocol based on the measurement in said propagation state measuring section.

5. A wireless access system including one or more mobile terminal apparatuses that perform wireless communications with one or more base station apparatuses, wherein each of said base station apparatuses has a wireless section that communicates radio signals with at least one of said mobile terminal apparatuses, and a protocol relay section that performs proxy processing on a network layer or a transport layer of OSI layer model, while each of said mobile terminal apparatuses has a first protocol processing section that processes a network layer protocol or transport layer protocol in OSI layer model.

6. A wireless access system including one or more mobile terminal apparatuses that perform wireless communications with one or more base station apparatuses, wherein each of said mobile terminal apparatuses has a wireless section that communicates radio signals with

one of said base station apparatuses, and a protocol relay section that performs proxy processing on a network layer or a transport layer of OSI layer model, while each of said base station apparatuses has a second protocol processing section that processes a network layer protocol or transport layer protocol in OSI layer model.

7. The base station apparatus according to claim 1, further comprising:

a protocol processing section that processes a network layer protocol or transport layer protocol in OSI layer model; and

a processing selecting section that selects either said protocol relay section or said protocol processing section corresponding to a type of said mobile terminal apparatus to instruct the processing for said mobile terminal apparatus.

8. A wireless access system, including:

a base station apparatus comprising:

a wireless section that communicates radio signals with mobile terminal apparatuses;

a first protocol relay section that performs proxy processing on a network layer of OSI layer model;

a second protocol relay section that performs proxy processing on a transport layer of OSI layer model; and

a processing selecting section that selects either said first protocol relay section or said second

protocol relay section corresponding to a type of said mobile terminal apparatus to instruct the processing for said mobile terminal apparatus,

a first mobile terminal apparatus comprising:

a wireless section that communicates radio signals with said base station apparatus; and

a third protocol relay section that performs proxy processing on a network layer or a transport layer of OSI layer model, and

a second mobile terminal comprising:

a protocol processing section that processes a network layer protocol or a transport layer protocol of OSI layer model.

9. A base station apparatus comprising:

a receiving section that determines whether or not to relay on a data link layer to a cable network a received packet of radio signal including information to identify whether or not to instruct a relay on the data link layer; and

a transmitting section that transmits the packet to the cable network according to the determined result.

10. The base station apparatus according to claim 9, wherein said receiving section has:

a header extracting section that extracts a header from the packet received on the data link layer;

a header interpreting section that interprets the header to determine whether or not the header includes

an instruction for relaying the packet on the data link layer; and

an output switching section that outputs the received packet to said transmitting section on the data link layer when the determined result is indicative of the instruction for relaying the packet on the data link layer.

11. The base station apparatus according to claim 10, further comprising:

a relay section that performs packet relay processing on a layer above the data link layer,

wherein said output switching section outputs the packet to said relay section when the determined result in said header interpreting section is not indicative of an instruction for relaying the packet on the data link layer.

12. The base station apparatus according to claim 10, further comprising:

a transport layer processing section that performs processing on the transport layer,

wherein said header interpreting section determines a type of data of payload of the received packet from the header, and when the determined result is indicative of data of the transport layer, said output switching section outputs the packet to said transport layer processing section.

13. The base station apparatus according to claim 10, wherein said header interpreting section determines

information on priority on transfer of the received packet from the header, and said output switching section outputs packets according to the priority.

14. The base station apparatus according to claim 9, wherein said receiving section has a composing section that composes packets per unit processing on the network layer from the received packet, and said output switching section outputs the packets composed in said composing section to said transmitting section on the data link layer.

15. A communication terminal apparatus comprising:

a header generating section that adds an instruction for relaying a packet on the data link layer to a header; and

a transmitting section that transmits the packet including the header as a radio signal.

16. The communication terminal apparatus according to claim 15, further comprising:

a detecting section which detects that a type of data of payload of a packet to transmit is data of the transport layer,

wherein said header generating section adds the detected result to the header as information on the type of the data of the payload.

17. The communication terminal apparatus according to claim 15, wherein said header generating section adds to the header a priority of packet transfer in said base

station apparatus according to contents of a packet to transmit.

18. The communication terminal apparatus according to claim 15, further comprising:

a dividing section that divides a packet of unit processing on the network layer into packets each of unit processing on or below the data link layer, wherein said transmitting section transmits packets divided in said dividing section.

19. A communication method, comprising:

on a transmitting side,

adding to a header an instruction for relaying a packet on the data link layer, and transmitting a radio signal of the packet with the header added thereto; and

on a receiving side,

receiving the radio signal to extract the packet, interpreting the header of the extracted packet, and when the header has the instruction for relaying the packet on the data link layer, composing a protocol service data unit from the packet, and relaying the composed protocol service unit on the data link layer to transmit to a cable network layer.